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Applicant	:	CHEN, Hua	
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REPLY BRIEF

Please consider the following Reply Brief in response to an Examiner's Answer in the appeal of the above-identified application. The present Reply Brief is to be considered for the appeal in addition to the Appeal Brief filed April 16, 2010.

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I) PAGE GUIDE RELATING THE BRIEF, THE EXAMINER'S ANSWER AND THE RESPONSE

In the Appeal Brief, five arguments (designated as Arguments (a) – (e)) were presented repeatedly in substantially similar form for the seven grounds of appeal. The Examiner's Answer first presents all seven rejections in one section, and then addresses the appellant's arguments in another. For clarity, the appellant provides the following guide to the corresponding portions of the briefs for each ground of rejection.

Ground 1 (argument (a)):

Appeal Brief Section A (starting on page 13)
Rejection in Examiner's Answer: Pages 4-5
Appellant's arguments discussed in Examiner's Answer: Pages 15-18
Reply Brief Section A (starting below on page 6)

Ground 2 (arguments (b), (d) and (e)):

Appeal Brief Section B (starting on page 14)
Rejection in Examiner's Answer: Pages 6-9
Appellant's arguments discussed in Examiner's Answer: Pages 18-21
Reply Brief Section B (starting below on page 7)

Ground 3 (arguments (c), (d) and (e)):

Appeal Brief Section C (starting on page 17)
Rejection in Examiner's Answer: Pages 9-12
Appellant's arguments discussed in Examiner's Answer: Pages 21-24
Reply Brief Section C (starting below on page 9)

Ground 4 (arguments (c), (d) and (e)):

Appeal Brief Section D (starting on page 21)
Rejection in Examiner's Answer: Pages 12-13
Appellant's arguments discussed in Examiner's Answer: Page 24 (middle)
Reply Brief Section D (starting below on page 11)

Ground 5 (arguments (b), (d) and (e)):

Appeal Brief Section E (starting on page 25)
Rejection in Examiner's Answer: Page 13
Appellant's arguments discussed in Examiner's Answer: Page 24 (bottom)
Reply Brief Section E (starting below on page 11)

Ground 6 (arguments (c), (d) and (e)):

Appeal Brief Section F (starting on page 28)
Rejection in Examiner's Answer: Page 14 (top)
Appellant's arguments discussed in Examiner's Answer: Page 25 (top)
Reply Brief Section F (starting below on page 11)

Ground 7 (arguments (c), (d) and (e)):

Appeal Brief Section G (starting on page 32)
Rejection in Examiner's Answer: Pages 14-15
Appellant's arguments discussed in Examiner's Answer: Page 25 (middle)
Reply Brief Section G (starting below on page 11)

II) GENERAL COMMENT ON CLAIM CONSTRUCTION

While the examiner's rejections are long and initially appear complicated, they primarily boil down to a single dispute between the examiner and the appellant. Throughout the Examiner's Answer there are a number of sections where the Answer recites that a wall is "broadly considered as being in a downstream direction." See, e.g., the top of page 24. These sections correctly recite that the pending claims must be interpreted as broadly as their terms reasonably allow, and that it is improper to import claim limitations from the specification. Nevertheless, based on the art that has been asserted and the examiner's latest statements, the appellant is now presuming the meaning of this statement is that the direction of flow at the compressor inlet (i.e., flowing toward the right in most of the figures) is being used in the Examiner's Answer to define the direction of the "downstream-facing blocking face" at the trailing edge.

The Oxford Online Dictionaries recite the definition of "downstream" as "situated or moving in the direction in which a stream or river flows." This is a reference to a local characteristic. Thus, the appellant asserts that the "downstream-facing blocking face" which is claimed to be "in the region of the trailing edge" would clearly refer to a downstream direction that is in the direction of flow at the discontinuity in the region of the trailing edge.

To any extent that this regular dictionary definition is unclear, it is proper to construe the phrase in light of the specification. As it is used throughout the application, at the trailing edge of the compressor wheel, the word downstream clearly means radially outward (which is upward in the cited figures).

Besides the apparently asserted definition being contrary to the dictionary definition of the word, the apparently asserted definition would also render the term meaningless, as the air flows in a myriad of directions throughout the entirety of the compression system (only a portion of which is shown in the application). In light of the specification, the phrase downstream-facing clearly means facing downstream based on the local flow of the airstream at the discontinuity.

II) SPECIFIC REPLY TO EXAMINER'S ARGUMENTS

A) GROUND 1, CLAIMS 1, 15/1 AND 18 [Argument (a)]

Regarding Argument (a), on the upper half of page 16 (lines 6 – 9), the Examiner's Answer recites that Mutsubori discloses a sharp edge connecting a downstream-facing blocking face (formed by the discontinuity) to a smoothly curving surface C upstream of the blocking face.

With reference to Figure A in the Appeal Brief (page 11), claim 1 recites a downstream-facing blocking face (Figure A, #101) extending across the gas flow path to form a sharp edge (Figure A, #105) connecting the blocking face to a smoothly curving surface (Figure A, #107) along the gas flow path upstream of the blocking face.

A highly enlarged depiction of the relevant portion of the drawing from Mitsubori et al. is replicated below, with additional notations. There is only one discontinuity, which is the sharp edge #501. A downstream-facing face #505 is formed upstream of the sharp edge (and an upstream-facing face #503 is formed downstream of the sharp edge). The Examiner's Answer correctly identifies face C as a smoothly curving surface upstream of the downstream-facing face #505. However, the sharp edge is not between the downstream-facing face #505 and the smoothly curving surface. Therefore, the sharp edge fails to connect a downstream-facing blocking face to a smoothly curving surface upstream of the blocking face. The appellant respectfully traverses the statement in the Examiner's Answer alleging that the claimed features are disclosed.

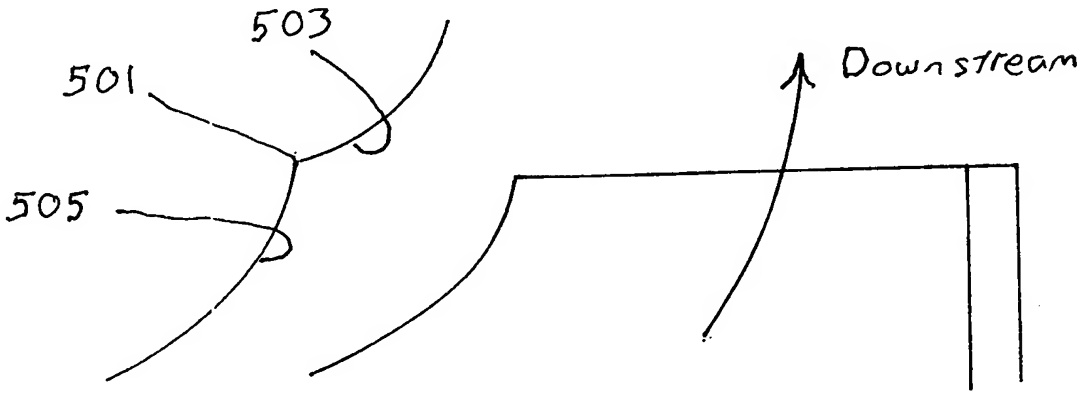

Figure from Mitsubori with annotations added

Note: this figure is hand drawn, not photocopied

On the lower half of page 16 through the upper portion of page 18, the Examiner's Answer further argues that certain portions of the specification suggest that the invention should be interpreted broadly, that Fig. 4a must be within the scope of the claims, and therefore that Mitsubori discloses the claim elements. This is argument violates basic rules of claim construction.

The present claims of the application are narrower than the original claims of the application. Even presuming that every disclosed embodiment was within the scope of the original claims, it is not reasonable claim construction to argue that the narrowed claims must read upon every disclosed embodiment.

Claim 1 explicitly recites a sharp edge connecting a blocking face to a smoothly curving surface upstream of the blocking face. Neither Mitsubori nor Fig. 4a disclose this feature. Because the cited reference fails to disclose the features of claim 1, 15/1 and 18, the Office Action fails to assert a prima facie case of anticipation, and the Appellant respectfully requests the rejections of claims 1, 15/1, and 18 under 35 U.S.C. § 102(b) be reversed.

B) GROUND 2, CLAIMS 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11 AND 18 [Arguments (b), (d) and (e)]

Regarding Argument (b)

Regarding Argument (b), on the lower portion of page 18, the Examiner's Answer recites that Yoshinaga discloses a sharp edge connecting a downstream-facing blocking face (formed by the discontinuity B) to a smoothly curving surface C upstream of the blocking face.

Unlike the Mitsubori reference from Ground 1, Yoshinaga does not have an apparent downstream-facing surface. The PTO 2007 KSR Guidelines, the PTO 2010 KSR Guidelines (published in the Federal Register on September 1, 2010) and MPEP § 2143 all acknowledge that the analysis supporting a rejection under 35 U.S.C. § 103 needs to be explicit. In the present case, it is not apparent that any face formed by the discontinuity B

is downstream facing. While the appellant has attempted to guess the face to which the rejection refers, it is not clear which face is alleged to be the downstream facing face, and therefore the analysis is not explicit.

Moreover, it is clear that a sharp edge formed by any face of the discontinuity fails to connect the downstream-facing face to a smoothly curving surface upstream of the downstream-facing face.

Because Yoshinaga fails to disclose a discontinuity having a downstream-facing blocking face that forms a sharp edge connecting the downstream-facing blocking face to a smoothly curving surface upstream of the blocking face, the Office Action fails to assert a prima facie case of obviousness, and the appellant respectfully requests the rejections of all claims rejected under Ground 2 be reversed.

Regarding Argument (d)

Regarding Argument (d), starting on page 19, the Examiner's Answer simply disagrees with the appellant's arguments. Claim 1 explicitly recites free-ended blades so that the shroud is necessarily an aerodynamically relevant surface within the aerodynamic region in which air is compressed. The Examiner's Answer essentially argues that it would be obvious to replace a shrouded blade with a free ended blade, despite the fact that the alleged shroud (i.e., the housing wall) is not configured to be aerodynamically relevant, and is in an aerodynamically insignificant location well outside of the blades' path. The appellant respectfully disagrees that a person skilled in the art would destroy the aerodynamics of a compressor in that fashion.

Regarding Argument (e)

Regarding Argument (d), starting on page 20, the Examiner's Answer recites that the discontinuity B is at the outlet, and is therefore broadly construed as being in the downstream-facing direction. It then states that it is improper to import claim limitations from the specification.

While importing limitations is improper, it is proper to construe an unclear word or phrase in light of the specification. At the outlet of the compressor wheel, the word downstream clearly means radially outward (which is up in the cited figure). If the term downstream-facing blocking face does not clearly indicate a face that faces downstream, the specification may be considered in construing the term.

Being at the outlet does not force it to be facing downstream. Indeed, for much of the prior art it means it is at a right angle to the downstream-facing direction. While the remark is unclear in meaning and not specific, this may be the issue raised in Section II, the GENERAL COMMENT ON CLAIM CONSTRUCTION, above. If that is the case, the appellant relies on the response in that section.

The cited references fail to disclose a downstream-facing blocking face.

C) GROUND 3, CLAIMS 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11 AND 18

Regarding Argument (c)

Regarding Argument (c), in the central portion of page 21, the Examiner's Answer recites that Fabri et al. discloses a sharp edge connecting a downstream-facing blocking face (formed by the discontinuity B) to a smoothly curving surface C upstream of the blocking face.

Similar to the Yoshinaga reference from Argument (b), Fabri et al. does not have an apparent downstream-facing surface. As was discussed in Argument (b), the analysis supporting a rejection under 35 U.S.C. § 103 needs to be explicit. In the present case, it is not apparent that any face formed by the discontinuity B is downstream facing. While the appellant has attempted to guess the face to which the rejection refers, it is not clear which face is alleged to be the downstream facing face, and therefore the analysis is not explicit.

Moreover, it is clear that a sharp edge formed by any face of the discontinuity fails to connect the downstream-facing face to a smoothly curving surface upstream of the downstream-facing face.

Because Fabri et al. fails to disclose a discontinuity having a downstream-facing blocking face that forms a sharp edge connecting the downstream-facing blocking face to a smoothly curving surface upstream of the blocking face, the Office Action fails to assert a prima facie case of obviousness, and the appellant respectfully requests the rejections of all claims rejected under Ground 2 be reversed.

Regarding Argument (d)

Regarding Argument (d), starting on page 19, the Examiner's Answer simply disagrees with the appellant's arguments, asserting that the housing surrounding a shrouded compressor wheel would still be considered a shroud (without showing any reference that uses the term as such). Nevertheless, the Examiner's Answer does correctly identify that the reference to a shroud 24 was incorrect. Fabri et al. does not recite a shroud. Rather, it recites two disks (7 & 8) connected by blades 9 to form rotating radial channels. In other words, it is a shrouded wheel, just like that of Yoshinaga in Ground (2). It is noteworthy that Fabri et al., like the present appellant, views these rotating radial channels, and not the external space between the disks and the housing, as the aerodynamically relevant airflow channels.

As was discussed above in section (B)(ii), claim 1 explicitly recites free-ended blades so that the recited shroud is necessarily an aerodynamically relevant surface within the aerodynamic region in which air is compressed. The Examiner's Answer essentially argues that it would be obvious to replace a shrouded blade with a free ended blade, despite the fact that the alleged shroud (the housing wall) is not configured to be aerodynamically relevant, and is in an aerodynamically insignificant location well outside of the blades' path. The appellant respectfully disagrees that a person skilled in the art would choose to adversely affect the aerodynamics of a compressor in that fashion. Indeed, for a supersonic compressor as is described in Fabri et al., it is unlikely that the compressor would be able to operate as a supersonic compressor without the carefully shaped shroud formed by disk 7.

Regarding Argument (e)

Regarding Argument (e), the Examiner's Answer basically asserts the issue addressed in Section II, the GENERAL COMMENT ON CLAIM CONSTRUCTION, above. The appellant relies on the response recited in this GENERAL COMMENT.

D) GROUND 4, CLAIMS 16 AND 17

Regarding Ground 4, the Examiner's Answer identifies the appellant's arguments as being the same as for Ground 3, for Fabri. The appellant in turn relies on the above-recited response to Ground 3.

E) GROUND 5, CLAIMS 1, 4, 5, 6, 9, 11, 12/6, 13/6, 14/6, 15/6, 12/9, 13/9, 14/9, 12/4, 13/4, 14/4, 15/1, 15/4, 15/11 AND 18

Regarding Ground 5, the Examiner's Answer identifies the appellant's arguments as being the same as for Ground 2, for Yoshinaga. The appellant in turn relies on the above-recited response to Ground 2.

F) GROUND 6, CLAIMS 1, 4, 5, 9, 11, 13/9, 14/9, 13/4, 14/4, 15/1, 15/4, 15/11 AND 18

Regarding Ground 4, the Examiner's Answer identifies the appellant's arguments as being the same as for Ground 3, for Fabri. The appellant in turn relies on the above-recited response to Ground 3.

G) GROUND 7, CLAIMS 16 AND 17

Regarding Ground 7, the Examiner's Answer identifies the appellant's arguments as being the same as for Ground 3, for Fabri. The appellant in turn relies on the above-recited response to Ground 3.

H) CONCLUSION

For the reasons set forth above, the rejections of claims are improper and should be reversed. A decision directing the Examiner to issue a Notice of Allowance is respectfully requested.

Respectfully submitted,

Hua CHEN

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